

Immune System Responses

 <http://www.youtube.com/watch?v=z3M0vU3Dv8E>

Bozeman
Science!

Pathogen - a disease causing agent - bacteria, virus, fungi, protist (protozoan)

B) What are non-specific first lines of defense against infection? Provide examples

- try to prevent pathogens from entering the body
- include skin, mucus, sweat, tears, stomach acid, bacteria on skin
- ex. tears contain an enzyme called lysozyme which can destroy pathogens, sweat is acidic which can kill pathogens

C) What are second lines of defense against infection?

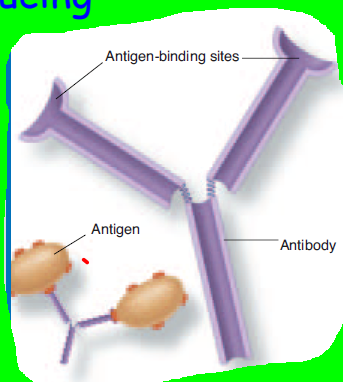
- if pathogen does enter - inflammatory response occurs
- white blood cells (phagocytes) enter the infected area and try to engulf the pathogen
- chemicals are also released to increase body temperature (fever), this slows down or stops growth of pathogen
- interferons are produced to inhibit production of proteins that virus' need to reproduction

d) Antigen - a protein marker that triggers an immune response

Antibody - proteins that bind to the antigens and prevents it from reproducing and harming other cells - some remain behind to fight the pathogen if it enters again

E. Humoral Immunity

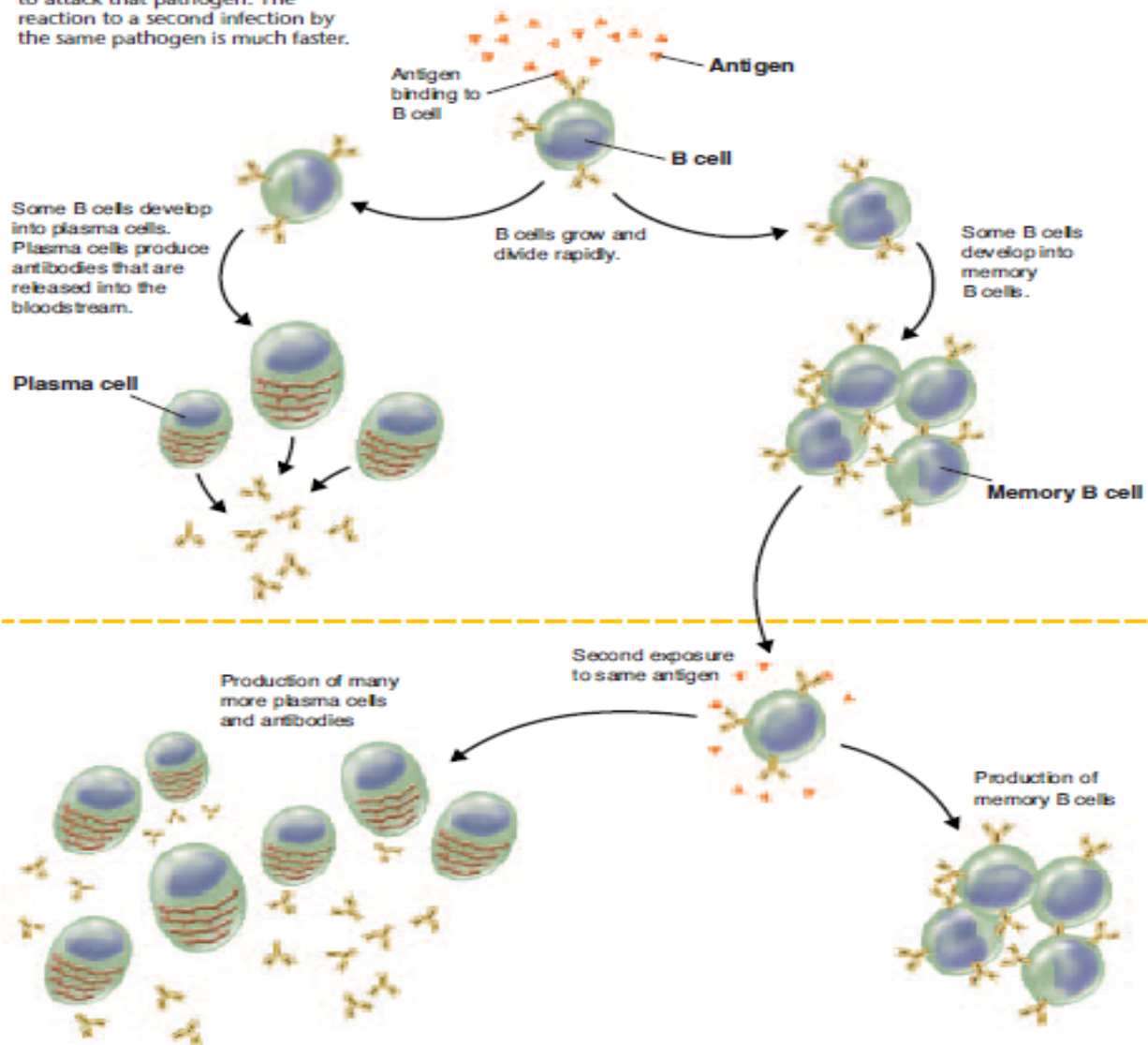
- involve B cells (aka B lymphocytes)
- type of white blood cell, produced and matures in the bone marrow
- attack pathogens that get by first line of defense (called humoral immunity)
found in the fluid surrounding the cells
- pathogens have special markers on them called antigens
- antigens are recognized by helper T cells
- helper T cells activate B cells
- B cells produce plasma cells
- plasma cells produce antibodies which bind to the antigen and prevent it from growing and reproducing



- memory B cells remain behind to attack the antigen should it enter again

Lesson 5 Immune System Responses.notebook

Once the body has been exposed to a pathogen, it remains capable of producing specific antibodies to attack that pathogen. The reaction to a second infection by the same pathogen is much faster.



F. Cell Mediated Immunity

- involves T cells (T lymphocytes)

special
WBC

- type of white blood cell produced in bone marrow but mature in the thymus gland

- fight pathogens inside cells by destroying the cell

1. helper T cells activate killer T cells

2. killer T cells - bind to and destroy cell containing pathogen

3. suppressor T cells slow down production of killer T cells

4. memory T - cells are there to fight next time

G) Explain the various ways immunity can be acquired.

- genetics
- through breast milk
- vaccinations
- exposure to pathogen

H) What is an allergic reaction?

What roles do histamines play in allergies?

What is an antihistamine

- over-reaction of the immune system
- allergens attach themselves to mast cells which release histamines
- histamines increase blood flow, fluids and mucous to the infected area
- excessive mucous leads to sneezing, runny nose, ect.

anti-histamines

l) What is an autoimmune disease?

Provide at least 4 examples that fit this category.

- body attacks its own cells
- ex. - type 1 diabetes
(attack insulin producing cells)
- rheumatoid arthritis
(attack joints)
- myasthenia gravis
(attack muscles)
- multiple sclerosis
(attack brain and spinal cord)
- crohn's disease
(attack cells of the digestive system and cause inflammation)